Miguel Jiménez

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Ph.D. student exploring the development- and run-time frontier to automate the evolution of cloud systems. I have industry experience and academic training in development for cloud, language engineering, and applied research.

EDUCATION

Ph.D. in Computer Science
University of Victoria
Exp. Dec 2020 | Victoria, Canada

M.Sc. in Software Engineering
Universidad Icesi
Aug 2016 | Cali, Colombia
Thesis: A framework for generating and deploying dynamic performance monitors for self-adaptive systems

B.E. in Systems Engineering
Universidad Icesi
Feb 2014 | Cali, Colombia
Thesis: PaSCAni: A language for V&V of functional requirements at run-time

CONTINUING EDUCATION

IBM Machine Learning and IoT Foundations–IBM (Badge)

Software Engineering Lifecycle of IoT Systems–NSERC DITA

MIT Entrepreneurship Laboratory with Mobile Technologies–MIT AITI

SELECTED AWARDS

2019   First place in DITA Hackathon
2019   Best Poster Presentation CSER
2017+ UVic Graduate Award (3 times)
2017   IBM Advanced Studies Grant
2017   Cleanest Code at HackUVic
2014   Young Researcher Fellowship

SKILLS

TECHNICAL SKILLS

Architecture Design
Containerized Applications
Continuous Delivery
Cloud Computing
Data mining (basic)
Infrastructure as Code
Language Engineering
Object-Oriented Programming
Software Deployment
Web programming

PROGRAMMING

Java • Xtend • JavaScript • CSS •
HTML • C • Python • LaTeX • C#
• Shell • Android (familiar) • SQL

PERSONAL INTERESTS

Gym, Soccer, Hackathons

RESEARCH EXPERIENCE

Graduate Research Assistant | Rigi Research Group
Aug 2016 – Present | University of Victoria, Canada

- Published 9 refereed journal, conference and workshop papers so far.
- Submitted a patent disclosure for revision and publication.
- Participate in ongoing industry collaborative projects with IBM, including **Reverse Engineering Deployment Specifications from Running Systems** and **Cognitive IoT Recipe Maven**.
- Implemented a proof of concept middleware to support the automated evolution of Terraform specifications based on run-time adaptations to a system running on VMware vSphere.
- Proposed an architectural framework for quality-driven and adaptive continuous experimentation. This proposal allows managing systems to plan and conduct experiments concerning the software architecture and the system infrastructure.
- Participated in the design and development of a conversational agent for the smart kitchen based on integrated user, fridge and grocery store contexts.
- Implemented a ReactJS web application as front-end for a smart recipe recommender.
- Implemented an Android application for the management of dietary restrictions.

Graduate Research Assistant | i2T/DRISO Research Group
Jan 2014 – Aug 2016 | Universidad Icesi, Colombia

- Published 3 refereed journal and conference papers.
- Participate in industry collaborative projects with Carvajal Tecnología y Servicios, including **Processing of Large and Complex XML Documents** and **Context-Driven Route Optimization for Home Health**.
- Created Amelia, a domain-specific language to automate the configuration and deployment of more than 300 experimental trials. The language addressed the following challenges: variability in architectural configurations, dependency management, coordination control, modularity and composability, reusability and extensibility.
- Created PaSCAni, a domain-specific language to specify, generate and deploy performance monitors to introspect service-oriented applications at run-time.
- Participated in technology transfer activities to adapt the asymmetric traveling salesman problem with time windows (ATSP-TW) to Carvajal's home-health product.
- Implemented a test case generator for the ATSP-TW.

Research Assistant Intern | i2T/DRISO Research Group
Jun 2013 – Dec 2013 | Universidad Icesi, Colombia

Proposed and implemented various component-based strategies for the matrix chain multiplication problem and conducted quantitative experiments to test their scalability.

INDUSTRY EXPERIENCE

Freelance Developer

Carvajal Espacios
2015 | Cali, Colombia

- Developed a Java web application using Play! framework for the purchasing department to manage raw material catalogs and suppliers as well as material search statistics. As part of the development, I designed the database relations and integrated the charting library Highcharts into the application.
- Led meetings with the customer to elicit the software requirements, and coordinated with the IT team to integrate an existing LDAP server and to deploy the application to the customer's infrastructure.
- Effectively planned and coordinated development tasks and meetings with the customer.

INDUSTRY EXPERIENCE

Freelance Developer

Laboratorios LaFrancol
2015 | Cali, Colombia

- Developed a web application for the purchasing department to create online auctions and invite partner suppliers to bid.
- Implemented a NodeJS server to handle live bids through WebSockets and an ASP.NET MVC web app using the Entity Framework.
- Led meetings with the customer for requirements elicitation and training sessions with the target users.

SQL Soluciones Informáticas
2012 | Cali, Colombia

- Advised the customer on hardware and software purchasing and technical decision making.
- Developed an information system for a premier trolley service for ticket management, printing, and selling. Implemented the system using ASP.NET MVC and Entity Framework.

Software Developer | SQL Soluciones Informáticas
2009 – 2010 | Cali, Colombia

- Deployed and managed the corporate website, customer support portal, and online store using Joomla! and Magento.
- Developed a PHP content management site for documentation and video tutorials, increasing customer satisfaction and supporting a market expansion. Recorded and edited more than 90 training videos.
- Designed advertisement for digital and print marketing campaigns.

GRADUATE TEACHING

University of Victoria
2016 - 2018 | Victoria, Canada

- Held the following teaching positions:
  - Lead Graduate Teaching Assistant for Fundamentals of Programming with Engineering Applications. Falls 2016 - 2018.
  - Graduate Consultant at the Assistance Centre in Computer Science. Spring 2018.
  - Graduate Teaching Assistant for Data Structures. Fall 2016.
- Lectured weekly labs and assisted students with programming and lab assignments.
- Tutored students and assisted them with programming assignments in one-on-one sessions for 1st, 2nd, and 3rd year courses.
- Co-led weekly meetings and developed teaching material and quizzes.
- Developed examgen, a program to generate examinations along with their solutions from a YAML input file. The resulting files are rendered to either LaTeX or Moodle. Examgen allowed us to stop printing **2800** quizzes and reduced marking time by **30h** per term.
- Developed grade-buddy to assist teaching assistants and professors in automating the marking of programming assignments.
- Developed an installation assistant to ease the installation of CLion and its dependencies on Windows, Mac, and Linux.
- Deployed and managed an online platform to host and mark programming assignments.

Universidad Icesi
2014 - 2015 | Cali, Colombia

- Supervised the following undergraduate degree projects from the Interactive Media Design program:
  - Knowledge management and dissemination: Alternative soccer culture
  - Folii: A natural and interactive encyclopedia mediated by citizen science
  - An information system for bicycle transportation

SERVICE AND VOLUNTEERING

Social Media Co-Chair | Consortium for Software Engineering Research (CSER) Meeting
Fall 2019 | Victoria, Canada

Volunteer instructor for the Web Programming Club | Universidad Icesi
Fall 2019 | Victoria, Canada

Developed teaching material and lectured students of the Systems Engineering and InteractiveMedia Design programs on HTML, CSS, and JavaScript.

Volunteer for the Families in Action program | Colombian Government – Department of Social Prosperity
Spring 2007 | Cali, Colombia

Assist women heads of household from vulnerable populations to register in the program andupdate their family information.